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EVALUATION OF 1962-63 SPRUCE BUDWORM POPULATIONS  
IN OREGON AND WASHINGTON

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INTRODUCTION

The fourth annual spruce budworm egg mass survey was made in areas designated by the 1962 cooperative aerial detection survey as harboring epidemic populations of the spruce budworm. The purpose of the survey was to determine the level and trend of overwintering budworm populations that will cause defoliation in 1963. Plots were sampled in south central Washington, northeastern Oregon, and south central Oregon. Again this year, plots were sampled in northern California in cooperation with Region 5 Insect and Disease Control personnel. The results of the survey in northern California are not reported in this paper.

The total infested area in Oregon and Washington decreased from 84,000 acres in 1961 to 48,000 acres in 1962. This reduction was mostly due to the spruce budworm control project in south central Washington, where 44,550 acres of infested timber on the Glenwood District of the State of Washington Department of Natural Resources and Yakima Indian Reservation were sprayed with one pound of DDT per gallon of fuel oil at the rate of one gallon per acre. Mortality due to spraying was assessed at 99.1 percent, thus making the project successful.

STATUS OF DEFOLIATION BY SPRUCE BUDWORM IN 1962

The 1961 and 1962 cooperative aerial detection survey reports listed the following acreages as defoliated by the spruce budworm in Oregon and Washington for that period: 1/2/

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1/ Buckhorn, W.J. and P.W. Orr. Forest Insect Conditions in the Pacific Northwest during 1961. U.S. Forest Service, Region 6. 41 pp. March 1962.

2/ Orr, P.W. Forest Insect Conditions in the Pacific Northwest during 1962. U.S. Forest Service, Region 6. (In process of publication.)

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Administrative Unit	1961		1962	
	Acres	Percent	Acres	Percent
<u>Oregon:</u>				
Fremont National Forest	55,200	65	42,060	87
Wallowa-Whitman N. F.	0	0	6,310	13
Oregon areas	55,200	65	48,370	100
<u>Washington:</u>				
Glenwood District	22,400	26	0	0
Yakima Indian Reservation	7,200	9	0	0
Washington areas	29,600	35	0	0
All areas	84,800	100	48,370	100

The total acreage infested with spruce budworm in 1962 was 43.0 percent less than that reported by the 1961 aerial survey. The acreage infested on the Fremont National Forest decreased 23.8 percent, while no new infestations were recorded on the Glenwood District or Yakima Indian Reservation in south central Washington, the area that was sprayed in 1962. In 1962, three new infestation centers, totaling 6,310 acres, were reported on the Wallowa-Whitman National Forest. No epidemic defoliation was reported from this area in 1961 although spruce budworm had been present in previous years.

The intensity of this year's defoliation in the Region ranged from light to moderate. Most of the defoliation on the Fremont and Wallowa-Whitman National Forests was light, but a few centers of moderate intensity were observed.

#### 1962 EGG MASS EVALUATION SURVEY

From August 20 to September 26, foliage was collected at 12 permanent sample plots in Oregon and Washington and five in northern California and examined for the presence of spruce budworm egg masses. New plots were established at Simcoe Butte, Washington, at Mormon Trail on the Wallowa-Whitman National Forest in Oregon, and at Patton Meadow on the Fremont National Forest in Oregon. Data from nine previously rated plots on the Fremont National Forest and five on the Modoc National Forest in northern California were again collected in 1962. A plot at Coleman Point on the Fremont National Forest was abandoned because the plot trees were cut to clear a road right-of-way.

#### Survey Methods

Methods and procedures of sampling and examining foliage for spruce budworm egg masses have been explained in reports of the three previous surveys.<sup>3/</sup>

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<sup>3/</sup> Buffam, P.E. Evaluation of 1961-62 Spruce Budworm Populations in Oregon and Washington. U.S. Forest Service, Region 6. 4 pp. (Processed.) Oct. 24, 1961.



For the third consecutive year, the spruce budworm egg mass survey headquarters were in Lakeview, Oregon. Foliage was collected from the plots by two- or three-man crews and brought to the Lakeview Ranger Station warehouse, where the foliage was examined by a crew of four women. The plots in Oregon and Washington were sampled by Region 6 personnel and the plots in northern California were sampled jointly by Region 5 and Region 6 personnel. Foliage from all plots were examined in Lakeview.

The 1962 egg mass survey required 121 man-days: 33 man-days collecting foliage, 78 man-days examining the foliage, and 10 days separating new and old egg masses and analyzing the data. This year's survey required 98 less man-days than last year's because four less plots were sampled and the life stages of associated arthropods were not collected.

### Evaluation

Results of the 1962 spruce budworm egg mass survey show that no infestation in Washington or Oregon is serious enough to warrant direct control (table 1). The following is a summary of spruce budworm conditions by area:

South Central Washington - The very light spruce budworm population just outside the eastern edge of the 1962 spray project area will continue at a very low level, causing some very light defoliation in 1963.

Northeastern Oregon - This small infestation northeast of Joseph, Oregon will increase in intensity in 1963. Some top-killing in Douglas-fir occurred in 1962 and more is expected next year.

South Central Oregon - The infestation in the Warner Mountains, which was generally static from 1961 to 1962, will increase in 1963. The 1962 defoliation on the plot trees at each sampling point ranged from very light to severe. Some top-killing was evident in 1962 with more expected in 1963. The infestation in the vicinity of Gearhart Mountain will continue at a static rate. Defoliation on the five plots in 1962 ranged from very light to severe. The egg count at Ryan Cabin which was very high in 1961 was sharply decreased in 1962.





Table 1.--Density of 1962 spruce budworm egg populations, intensity of defoliation of new shoots, and predicted trends at 12 points in Oregon and Washington

Forest and area	Plot	New egg masses per 1000 sq.in.		Average defoliation of new shoots in 1962	Level <sup>1/</sup>	Predicted 1962-63 populations	Trend
		1962	1961				
		- Number -		Percent	Level <sup>1/</sup>	Level <sup>1/</sup>	
Simcoe Butte, Washington	Simcoe Butte #7	0.3	0.0 <sup>2/</sup>	1	Very light	Very low	Static
Wallowa-Whitman N.F., Ore. Wallowa Mtns.	Mormon Trail	11.6 <sup>3/</sup>	6.4 <sup>2/</sup>	--	--	High	Up
Fremont N.F., Oregon Warner Mtns.	Summit Prairie	11.7	7.8	50	Moderate	High	Static
	Rogger Peak	2.9 <sup>3/</sup>	1.0	10	Very light	Very low	Up
	Kelley Creek	1.6	2.4	30	Moderate	Very low	Static
	Drake Springs	4.2 <sup>3/</sup>	3.0	30	Moderate	Low	Up
	Squaw Butte	16.7 <sup>3/</sup>	8.8	80	Severe	Very high	Up
Gearhart Mtn.	Picture Flat	0.2	0.2	1	Very light	Very low	Static
	Patton Meadow	8.5 <sup>3/</sup>	3.9	60	Heavy	Medium	Up
	Pothole Creek	14.2	11.2	50	Moderate	High	Static
	Mitten Springs	1.7	0.7	1	Very light	Very low	Static
	Ryan Cabin	4.7 <sup>3/</sup>	26.9	90	Severe	Low	Down

<sup>1/</sup> Carolin, V.M. and W.K. Coulter. Research Findings Relative to the Biological Evaluation of Spruce Budworm Infestations in Oregon. U.S. Forest Service, Pacific Northwest Forest and Range Experiment Station. 39 pp. (Processed.) December 14, 1959.

<sup>2/</sup> Plot was established in 1962. 1961 egg density was estimated from "old" egg masses recovered during the 1962 survey.

<sup>3/</sup> Significant at  $p = .10$ .

